CORRES. CONTROL
OUTGOING LTR NO.

0000043227 ERPO Records (2)

DOE ORDER# 5400.1

94 RF 09565

DIST.	LTR	ENC
AMARAL, M.E.		
BURLINGAME, A.H.		
BUSBY, W.S.		
BRANCH, D.B.		
CARNIVAL, G.J.		
DAVIS, J.G.		
FERRERA, D.W.		
FRAY, R.E.		
GEIS, J.A.		
GLOVER, W.S.		
GOLAN, P.M.		
HANNI, B.J.		
HARMAN, L.K.		
HEALY, T.J.		
HEDAHL, T.		
HILBIG, J.G.		
HUTCHINS, N.M.		
JACKSON, D.T.		
KELL, R.E.		
KUESTER, A.W.		
MARX, G.E.		
McDONALD, M.M.		
McKENNA, F.G.		
MONTROSE, J.K.		
MORGAN, R.V.		
POTTER, G.L.		
PIZZUTO, V.M.		
RISING, T.L.		
SANDLIN, N.B.		
SCHWARTZ, J.K.		
SETLOCK, G.H.		
STEWART, D.L.		
STIGER, S.G.	X	
TOBIN, P.M.		
VOORHEIS, G.M.		
WILSON, J.M.		
Broussard, M.C	X	
Gregory-Frost, L.A	X	
O'Dell, K.K.	X	
CORRES. CONTROL	X	X
ADMIN RECORD/060	X	X
TRAFFIC		
PATS/T130G		

CLASSIFICATION:

UCNI		
UNCLASSIFIED		
CONFIDENTIAL		
SECRET		

AUTHORIZED CLASSIFIER SIGNATURE

DOCUMENT CLASSIFICATION REVIEW WAIVER PER CLASSIFICATION OFFICE

DATE

IN REPLY TO RFP GC NO:

ACTION ITEM STATUS
☐ PARTIAL/OPEN
☐ CLOSED

LTR APPROVALS:

ORIG & TYPIST INITIALS
LAG:bk

EG&G ROCKY FLATS

EG&G ROCKY FLATS, INC.
ROCKY FLATS PLANT, P.O. BOX 464, GOLDEN, COLORADO 80402-0464 • (303) 966-7000

September 14, 1994

94-RF-09565

T. Lockhart
Project Manager for Environmental
Restoration Program Division
DOE, RFFO

Attn: D. George, Operable Unit 11 Project Manager

NOTIFICATION OF COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE) FOR THE ABANDONMENT OF WELL 4986 AND REPLACEMENT BY WELLS 51494 AND 51594 BY SEPTEMBER 21, 1994 - LAG-054-94

Action: Notify Dr. Frederick R. Dowsett

The purpose of this letter is to request that the Department of Energy, Rocky Flats Field Office notify Dr. Frederick R. Dowsett, CDPHE, of the abandonment of Well 4986, at the following address:

> Frederick R. Dowsett,PhD, Section Chief, Monitoring and Enforcement, Colorado Department of Public Health and Environment, HMWMD-HWC-B2, 4300 Cherry Creek Drive South, Denver, Colorado 80222-1530

Well 4986 is part of the Operable Unit 11 (OU11), the West Spray Field, list of annual Reserve Conservation and Recovery Act (RCRA) reporting wells. Well 4986 was constructed in 1986 with a screened interval from 4.1 to 67.6 feet in the Rocky Flats Alluvium. Recently two groundwater monitoring wells were installed in OU11, approximately 10 feet from Well 4986, as part of a RCRA combined Phase I Remedial Field Investigation/Remedial Investigation (RFI/RI). These wells are 51494 and 51594 which are screened from 48.7 to 68.7 and 12.0 to 22.0 feet, respectively.

Perched groundwater was observed in Well 51594; therefore, Well 4986 may act as a conduit for the intermixing of groundwater from two alluvial water bearing strata. This is a criteria for well abandonment at Rocky Flats, in accordance with U.S. Department of Energy (DOE) Order 5400.1, plant protection. Attached are well construction diagrams for each well and the geologic log for the deeper boring (51494). Well 4986 is proposed for abandonment by September 30, 1994, in accordance with applicable State of Colorado and

ADMIN RECORD

A-OU11-000137

plant requirements by the 1994 Well Abandonment and Replacement Program. Therefore, please notify Dr. Frederick R. Dowsett for his concurrence on or before September 21, 1994, to meet the September 30 deadline.

If you have any questions please contact Mark Wood at extension 8784 or Kelly O'Neill at extension 8665.

L. A. Gregory-Frost

L. A. Gregory-Frost
Field Operations Manager

MRW:bk

Attachment:
At Stated

cc:
N. Castenada - DOE, RFFO (w/o attach.)
J. Dion - DOE, RFFO (w/o attach.)
J. M. Roberson - DOE, RFFO (w/o attach.)
M. N. Silverman - DOE, RFFO (w/o attach.)

Attachment 1
LAG-054-94
Page 1 of 10

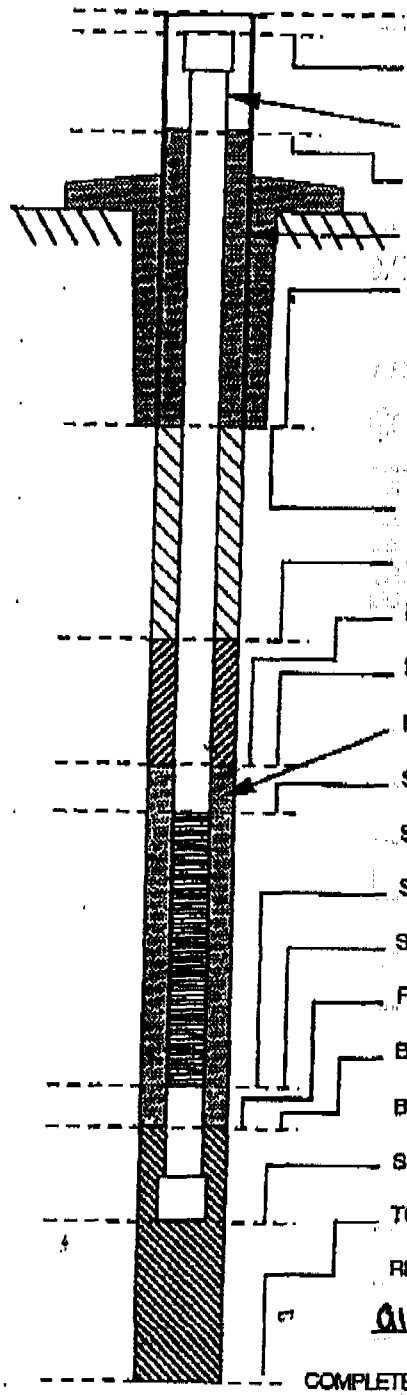
U.S. Department of Energy Rocky Flats Plant

Form GT.08
(Rev. 3)
ORR 3/3/94

Groundwater Monitoring Well and Piezometer Report

LOCATION CODE: 51494 PROJECT NAME: OU1 WSF PROGRAM:
SCREENED FORMATION: Alluvium DRILLING CONTRACTOR: Water Development Corp
DRILLING METHOD: Resonant Sonic DATE DRILLED: 062294 DATE COMPLETED: 063094
RIG GEOLOGIST: Jennifer Higgins LOGGING GEOLOGIST: Dayna Bigar
COMPLETED DEPTH (FT): 72.0' ESTIMATED DEPTH TO BEDROCK (FT): 69.0'
BOREHOLE DIAMETER IN SCREENED INTERVAL (IN): 7"

QUANTITY OF FLUIDS LOST DURING DRILLING (GAL): 0
INITIAL WATER LEVEL (FT): 58.80' DATE MEASURED: 062894
COMPLETED WATER LEVEL (FT): 52.65' DATE MEASURED: 063094



PROTECTIVE CASING, TOP (FT): 2.5 (FROM GROUND SURFACE)
SURFACE CASING (STICKUP), TOP (FT): 2.0'
SURFACE CASING, I.D. (IN): 2" TYPE: PVC
SURFACE SEAL, TOP (FT): 1.0' TYPE: non-shrink cement
PROTECTIVE CASING, I.D. (IN): 6" TYPE: Steel
PROTECTIVE CASING, BOTTOM (FT): 2.5'
IF APPLICABLE (No) SECONDARY CASING, TOP (FT): ____ BOTTOM (FT): ____
SECONDARY CASING, I.D. (IN): ____ TYPE: ____
CENTRALIZER, O.D. (IN): 7" TOP (FT): 43.2' BOTTOM (FT): 43.7'
GROUT SEAL, TOP (FT): 1.0' TYPE: Bentonite Grout
BENTONITE SEAL, TOP (FT): 42.9' TYPE: Bentonite Pellets
BENTONITE SEAL, BOTTOM (FT): 46.5'
FILTER PACK, TOP (FT): 46.5'
FILTER PACK TYPE: 16-40 Silica Sand BRAND: Colorado Environmental
SURFACE CASING, BOTTOM (FT): 48.7' SCREEN, TOP (FT): 48.7'
SCREEN SLOT SIZE (.000 IN): 0.010 SCREEN, I.D. (IN): 2"
SCREEN, BOTTOM (FT): 68.7 TYPE: Sch 40 PVC BRAND: TITAN
SUMP, TOP (FT): 68.7 TYPE: 2" sch 40 PVC
FILTER PACK, BOTTOM (FT): 71.0
BACKFILL, TOP (FT): 71.0 TYPE: Bentonite Pellets
BACKFILL, BOTTOM (FT): 92.0'
SUMP, BOTTOM (FT): 70.7'
TOTAL DEPTH (FT): 72.0'

ALL MEASUREMENTS WILL BE MADE FROM GROUND SURFACE.

REMARKS: 0.3' end cap; 2.0' sump; 20' slotted screen;
All SOPs were followed in installation procedures.

COMPLETED BY: Jennifer A. Higgins DATE: 063094
CHECKED BY: Stephen M. Lyon DATE: 07/8/94

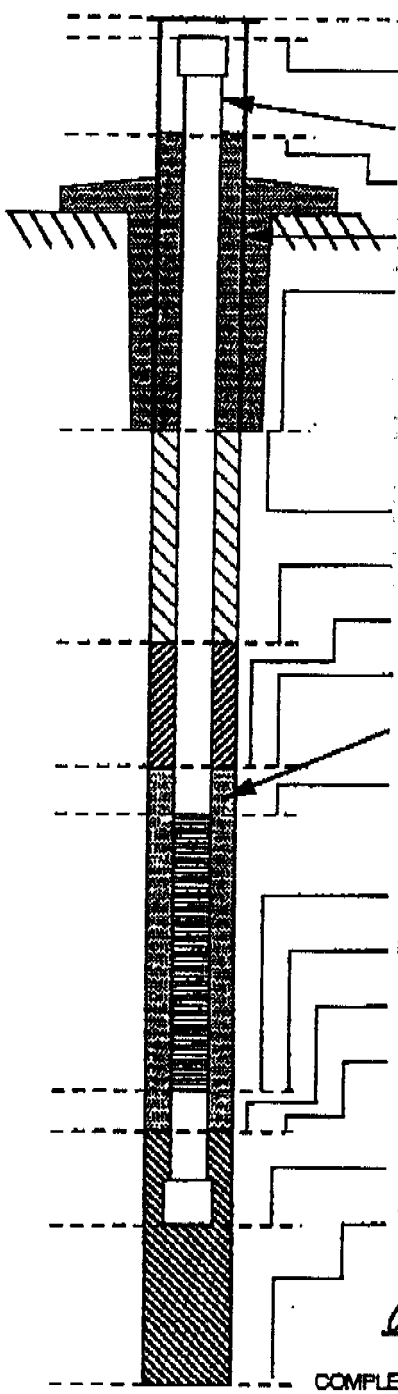
U.S. Department of Energy Rocky Flats Plant

Form GT.6B (Rev. 3) ORR 3/31/94

Groundwater Monitoring Well and Piezometer Report

LOCATION CODE: 51594 PROJECT NAME: OU-11 WSF PROGRAM:
SCREENED FORMATION: Alluvium DRILLING CONTRACTOR: Water Development Corporation
DRILLING METHOD: Resonant Sonic DATE DRILLED: 081894 DATE COMPLETED: 081994
RIG GEOLOGIST: J. Higgins LOGGING GEOLOGIST: D. Bigor
COMPLETED DEPTH (FT): 22.0 ESTIMATED DEPTH TO BEDROCK (FT): Not Encountered
BOREHOLE DIAMETER IN SCREENED INTERVAL (IN): 7

QUANTITY OF FLUIDS LOST DURING DRILLING (GAL): 0
INITIAL WATER LEVEL (FT): 23.13' DATE MEASURED: 082394
COMPLETED WATER LEVEL (FT): DATE MEASURED:



PROTECTIVE CASING, TOP (FT): 2.5 (FROM GROUND SURFACE)
SURFACE CASING (STICKUP), TOP (FT): 2.0
SURFACE CASING, I.D. (IN): 2.0 TYPE: sch 40 PVC
SURFACE SEAL, TOP (FT): 1.0 TYPE: non-shrink cement
PROTECTIVE CASING, I.D. (IN): 6.0 TYPE: Mild-Steel
PROTECTIVE CASING, BOTTOM (FT): 2.5

IF APPLICABLE
SECONDARY CASING, TOP (FT): BOTTOM (FT):
SECONDARY CASING, I.D. (IN): TYPE:

CENTRALIZER, O.D. (IN): NA TOP (FT): BOTTOM (FT):
GROUT SEAL, TOP (FT): 5.0 TYPE: PureGold(tm) Bentonite-Cement
BENTONITE SEAL, TOP (FT): 5.0 TYPE: Volclay PureGold(tm) ½" Bentonite Tablets
BENTONITE SEAL, BOTTOM (FT): 8.1'
FILTER PACK, TOP (FT): 8.1'
FILTER PACK TYPE: 16-40 Silica Sand BRAND: Colorado Environmental Media
SURFACE CASING, BOTTOM (FT): 10.0 SCREEN, TOP (FT): 10.0
SCREEN SLOT SIZE (.000 IN): 0.010 SCREEN, I.D. (IN): 2.0
SCREEN, BOTTOM (FT): 20.0 TYPE: sch 40 PVC BRAND: Titan
SUMP, TOP (FT): 20.0 TYPE: sch 40 PVC
FILTER PACK, BOTTOM (FT): 21.0
BACKFILL, TOP (FT): 21.0 TYPE: Volclay PureGold(tm) ½" Bentonite Tablets
BACKFILL, BOTTOM (FT): 22.0
SUMP, BOTTOM (FT): 22.0
TOTAL DEPTH (FT): 22.0

ALL MEASUREMENTS WILL BE MADE FROM GROUND SURFACE

REMARKS: 0.3' end cap; 2.0' sediment sump; 10' screen; 10' riser
All SOPs followed during drilling, sampling and installation

COMPLETED BY: Jennifer Higgins for S. Lynn DATE: 082394
CHECKED BY: Stephanie M. Lynn DATE: 082494

U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT FORM GT.1A (REV. 2)

ROCKY FLATS PLANT BOREHOLE LOG

PAGE 1 OF 8

Borehole Number: 51494
Location - North: East:
Date: 062294
Geologist: [illegible] / D. Bly[illegible] / J. Baylom
Drilling Equip.: Resonant Sonic

Surface Elevation:
Area: OU11 West Spray Field
Total Depth: 72.0
Company: Stoller
Project No.: OU11
Sample Type: Continuous Core

EG&G LOGGING SUPERVISOR APPROVAL [signature] DATE 8/19/94

Top/Bottom of Core in Box	Top/Bottom of Interval	Feet of Core in Interval (Field Measurement)	Sample Number	Fracture Angle	Bedding Angle	Grain Size Distribution	USCS Symbol	Depth in Feet	Lithologic Log	Sample Description
										Sandy gravel with some silt and trace clay.
0.0 Box 1/18	0.0 Run 1	2.5	BH00074ST		12% silt 2% clay	51% gravel 34% sand	GM	0.0 – 1.4		[illegible] gravel: Dark grayish brown (10YR 4/2) to brown (10YR 4/3). Clasts to >4" (gravels and cobbles); sands fine to coarse (avg. medium to coarse). Well graded. Gravels subrounded to rounded (angular where broken during drilling); sands dominantly subangular. Low plasticity. Gravels mostly schist, gneiss, quartzite; sands mostly quartz plus rock fragments. No apparent bedding. Dry.
						[illegible]	CL	1.4 – 1.75	VOC	Sandy [illegible]: Yellowish red (5YR 4/6) to dark red (2.5YR 4/6). Traces gravel; abundant fine sand. Moderate grading. Subangular. Low plasticity. Quartz with some Fe-oxides. No bedding; scattered clay pockets. Dry to slightly moist. — sandy clay with some silt, trace gravel.
	2.0 Run 2	2.4	BH00075ST		5% silt 8% clay	80% gravel [illegible]	GM	1.75 – 3		Sandy gravel: Very dark grayish brown (10YR 3/2). Gravels up to 2"; sands fine to coarse (dominantly medium to coarse). Well graded. Gravels subrounded (angular where broken during drilling), sands dominantly subangular. Low plasticity. Gravels dominantly schist, gneiss and quartzite; sands mostly quartz. No bedding. Dry to very slightly moist. — with some clay, trace silt.
					[illegible]	57% gravel 21% sand	GC	3 – 4	VOC	Sandy [illegible] gravel: Strong brown (7.5YR 5/6) to yellowish red (5YR 5/8). Medium to coarse gravel (up to 1"); very fine to very coarse sand, with traces of [illegible] carbonaceous material. Well graded. Gravels subangular to subrounded; sands subangular. Gravels quartzite, gneiss, schist, granite; sand mostly quartzite and rock fragments. No bedding. Dry to very slightly moist. — with some silt, trace carbonaceous material.
4.0	4.0 Run 3	2.8	BH00076ST		11% silt 3% clay	72% gravel 14% sand	SM	4 – 4.6		Gravelly [illegible] sand: Dark yellowish brown (10YR 4/6). Gravels fine to coarse up to 1"; sand very fine to coarse. Rotted schist present. Well graded. Gravel subrounded, sand subangular to angular. Low plasticity. Cobbles schist, quartzite, gneiss; gravels quartzite with broken rock fragments. No bedding. Dry. — with some silt, trace clay.
Box 2/18						46% gravel 44% sand 4% silt 6% clay	GM	4.6 – 5.75	VOC	Sandy [illegible] gravel: Brownish yellow to reddish yellow. Gravels and cobbles up to 4"; sands fine to coarse, dominantly medium to coarse. Well graded. Gravels subangular (cobbles rounded); sands [illegible] subangular. Low plasticity. Gravels quartzite, schist; sands dominantly quartzite, top 1' of interval rock flour present, traces of [illegible] Fe-oxides. No bedding. Dry. — with some clay, trace silt, carbonaceous material.
	6.0 Run 4	1.4	BH00077ST					6 – 6.8		
						40% gravel 53% sand 4% clay 2% silt	GC	6.8 – 7.75		6.8 – 9.4 ft Gravelly [illegible] sand: Pale olive (5Y 6/3) to yellowish brown (10YR 5/8). Coarse gravel with clasts up to 4"; sand very fine to very coarse, well graded. — with some clay, trace silt. No core recovery 7.4 – 7.5
8.0	8.0							7.75 – 9.4	VOC	Gravels mainly subangular; sands angular to subangular. Gravels mostly quartzite; sands quartz. No apparent bedding. Dry.
Box 3/18	Run 5	1.9	BH00078ST					9		
	Run 6						GM	9.4 – 9.75 – 10	VOC	see page 2

NOTES: General: USCS is modified for this log as follows:
Materials amounts are estimated by % volume instead of % weight.
(1) Badly broken core, accurate footage measurements not possible.
(2) Core breaks cannot be matched, accurate footage measurements not possible.

U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT FORM GT.1A (REV. 2)

ROCKY FLATS PLANT BOREHOLE LOG

PAGE 2 OF 3

Borehole Number: 51494
Location - North: ______ East: ______
Date: 062394
Geologist: ~~Higgins~~ / Boulanger Dyna-Rigby
Drilling Equip.: Resonant Sonic

Surface Elevation: ______
Area: OU11 - West Spray Field
Total Depth: 72.0
Company: ~~Smith~~ Project No.: 0111
Sample Type: Continuous Core

EG&G LOGGING SUPERVISOR APPROVAL S. M. Paris DATE 8/19/94

TOP/BOTTOM OF CORE IN BOX	TOP/BOTTOM OF INTERVAL	FEET OF CORE IN INTERVAL (FIELD MEASUREMENT)	SAMPLE NUMBER	FRACTURE ANGLE	BEDDING ANGLE	GRAIN SIZE DISTRIBUTION	USCS SYMBOL	DEPTH IN FEET	SOIL/LITHOLOGIC LOG	SAMPLE DESCRIPTION
Box 3/18 cont'd	Run 7 ~~100~~	3.65	BH00084ST					10, 11, 11.75	VOC (11.75)	9.4 - 17.2 Gravelly sand ~~with some silt and trace clay~~ ~~Sandy gravel~~. Strong brown (7.5YR 5/6) to Yellowish brown (10YR 5/6). Cobbles up to 3", coarse gravels; sands ~~very~~ fine to very coarse mainly fine. Well graded. Gravel subrounded to subangular; sand subrounded to angular. Gravel mainly quartzite; sands quartz with trace of staining at 9.6 feet. No bedding. Rock flour abundant present in 11-12 and 13-14 foot intervals. No bedding. Slightly moist.
Box 4/18	Run 8 ~~7~~	1.3	BH00080ST / BH00081ST (Dup)			82% gravel		12		
	Run 9	1.0				60% sand	GM	13		
	Run 10	.5	~~Wipe~~			6% silt		14		
	~~Run 8~~ Run 11	3.0	~~VOC~~			2% Clay		15		
	Run 12	1.3						16, 17		
Box 5/18	Run 13	1.5				28% gravel		17.2, 17.75, 18	VOC (17.75)	17.2 - 39.0 ~~Clayey~~ Gravelly sand with some clay trace silt. Strong brown (7.5YR 5/6) to dark red (2.5YR 4/6) with pale olive (5Y 6/3) present in 17.2 - 20 interval. Gravels up to 2"; sands fine to coarse. Well graded. Gravels subrounded to subangular; angular where broken during drilling; sands dominantly subangular. Gravels dominantly quartzite; sands dominantly quartz. No bedding. Moist.
	Run 14	2.3	BH00082ST			51% sand, 19% clay, 2% ~~3%~~ silt	SC	19, 20		

NOTES: General: USCS is modified for this log as follows:
Materials amounts are estimated by % volume instead of % weight.
(1) Badly broken core, accurate footage measurements not possible.
(2) Core breaks cannot be matched, accurate footage measurements not possible.

U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT FORM GT.1A (REV. 2)

ROCKY FLATS PLANT BOREHOLE LOG

Borehole Number: 51494
Location - North: _____ East: _____
Date: 8/23/94 - 8/24/94
Geologist: Dayna Bigar
Drilling Equip.: Resonant Sonic

Surface Elevation: _____
Area: OU11 West Spray Field
Total Depth: 72.0
Company: Stoller Project No.: OU11
Sample Type: Continuous core

EG&G LOGGING SUPERVISOR APPROVAL J. M. Pons DATE 8/19/94

TOP/BOTTOM OF CORE IN BOX	TOP/BOTTOM OF INTERVAL	FEET OF CORE IN INTERVAL (FIELD MEASUREMENT)	SAMPLE NUMBER	FRACTURE ANGLE	BEDDING ANGLE	GRAIN SIZE DISTRIBUTION	USCS SYMBOL	DEPTH IN FEET	SOIL/LITHOLOGIC LOG	SAMPLE DESCRIPTION
								20		Gravelly Sand with some clay and trace silt.
Box 6/18	Run 18	2.65	BH00082ST (cont'd)					21		Same as above (see pg 2)
	Run 16	2.5						22		
DLR	Run 17	1						23		
						25% gravel 5% sand 17% clay 28% silt	SC	24	VOA	
Box 7/18	Run 18	2.5						25		
								26		
DLR	Run 19	2.2	BH00083ST					27		
								28		
Box 8/18	Run 20	2.3						29		
								30	VOA	

NOTES: General: USCS is modified for this log as follows:
Materials amounts are estimated by % volume instead of % weight.
(1) Badly broken core, accurate footage measurements not possible.
(2) Core breaks cannot be matched, accurate footage measurements not possible.

U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT FORM GT.1A (REV. 2)

ROCKY FLATS PLANT BOREHOLE LOG

PAGE 4 OF 8

Borehole Number: 51494
Location - North: _____ East: _____
Date: 062794
Geologist: Shiloh Dayna Rigor
Drilling Equip.: Resonant Sonic

Surface Elevation: _____
Area: Gill West Spray Field
Total Depth: 72.0
Company: Shaller Project No.: 6111
Sample Type: Continuous Core

EG&G LOGGING SUPERVISOR APPROVAL J. M. Pavs DATE 8/19/94

TOP/BOTTOM OF CORE IN BOX	TOP/BOTTOM OF INTERVAL	FEET OF CORE IN INTERVAL (FIELD MEASUREMENT)	SAMPLE NUMBER	FRACTURE ANGLE	BEDDING ANGLE	GRAIN SIZE DISTRIBUTION	USCS SYMBOL	DEPTH IN FEET	SOIL LITHOLOGIC LOG
Box 8/18 cont'd	Run 21	3.0	BH00090ST					30	
								31	
	Run 22	2.0				25% gravel 21% sand 19% clay 35% silt	SC	32	
Box 9/18								33	
					28			34	
	Run 23	3.7						35	
								36	VOC
Box 10/18	Run 24	5.0	BH00091ST					37	
								38	
	Run 25 cont.	5.0				20% gravel 21% sand 41% silt 7% clay	SM	39	
								40	

Gravelly sand with some clay and trace silt. Same as above (see pg. 5) Dry

Same as above. Gravelly sand with some clay and trace silt moist to dry. Very large broken boulder (>4") 35.6' - 36.8'.

with some silt and trace clay

34 - 41 Silty gravelly sand. Yellowish brown (10YR 5/4) to yellowish red (5YR 5/2) Gravel up to 2", med average 1/2", sand is very fine to very coarse (dominantly fine). Well graded. Subrounded to subangular gravel, sand subangular. Gravel dominantly quartzite, sand dominantly quartz. No bedding. Dry to very slightly moist.

NOTES: General: USCS is modified for this log as follows:
Materials amounts are estimated by % volume instead of % weight.
(1) Badly broken core, accurate footage measurements not possible.
(2) Core breaks cannot be matched, accurate footage measurements not possible.

ROCKY FLATS PLANT BOREHOLE LOG

Borehole Number: 51494
Location - North: ____ East: ____
Date: 062794
Geologist: Arthur Dayna Rigor
Drilling Equip.: Resonant Sonic

Surface Elevation: ____
Area: Pu11 West Spray Field
Total Depth: 72.0
Company: Stoller Project No.: 0111
Sample Type: Continuous Core

EG&G LOGGING SUPERVISOR
APPROVAL J. M. Pons DATE 8/19/94

TOP/BOTTOM OF CORE IN BOX	TOP/BOTTOM OF INTERVAL	FEET OF CORE IN INTERVAL (FIELD MEASUREMENT)	SAMPLE NUMBER	FRACTURE ANGLE	BEDDING ANGLE	GRAIN SIZE DISTRIBUTION	USCS SYMBOL	DEPTH IN FEET	SOIL LITHOLOGIC LOG	SAMPLE DESCRIPTION
	RUN 25 Cont'd	see Pg. 4	BH00091ST (Cont'd)				SM	40		same as above (see pg. 4) ~~silty~~ gravelly sand with some silt trace clay.
Box 11/18	Run 26	2.3				28% gravel 50% sand 19% ~~silt~~ clay 3% silt		41		with some clay trace silt.
	Run 27	3.0					SC	42	VOA	~~clayey~~ gravelly sand (41.2 - 42.0) Strong brown (7.5YR 5/6) to dark red (2.5YR 4/6). Gravels up to 2" present in top 1" of interval, sands fine to coarse. Well graded. Gravels subrounded to subangular, sands dominantly subangular. Gravels dominantly quartzite, sands dominantly quartz. No bedding. Very dry to slightly moist.
								43		
								44		
Box 12/18	Run 28	5.0	BH00092ST					45		
								46		
								47		
								48	VOA	with some clay and trace silt
Box 18/18	Run 29	5.0	BH00093ST				SC	49		~~clayey~~ gravelly sand (as above) moist.
								50		

NOTES: General: USCS is modified for this log as follows:
Materials amounts are estimated by % volume instead of % weight.
(1) Badly broken core, accurate footage measurements not possible.
(2) Core breaks cannot be matched, accurate footage measurements not possible.

ROCKY FLATS PLANT BOREHOLE LOG

Borehole Number: 51494
Location - North: _____ East: _____
Date: 062794
Geologist: ~~[illegible]~~ Dayna Regan
Drilling Equip.: Resonant Sonic

Surface Elevation: _____
Area: Will to West Spray Field
Total Depth: 77.9'
Company: Stoller Project No.: OU11
Sample Type: Continuous Core

EG&G LOGGING SUPERVISOR APPROVAL D. M. Evans DATE 8/19/94

DISPOSITION OF CORE IN BOX	DISPOSITION OF INTERVAL	FEET OF CORE IN INTERVAL (FIELD MEASUREMENT)	SAMPLE NUMBER	FRACTURE ANGLE	BEDDING ANGLE	GRAIN SIZE DISTRIBUTION	USCS SYMBOL	DEPTH IN FEET	BOREHOLE LITHOLOGIC LOG	SAMPLE DESCRIPTION
								50		with some clay and trace silt
Box 13/18 Cont'd	RUN 29 Cont'd	see Pg 5	BH0009345T					51		~~clayey~~ gravelly sand (as above - see page 5).
								52		
								53		
Box 14/18							SC	54	VDA	
								55		with some silt
						75% sand 18% clay 7% silt		55.2		Clayey Sand. Strong brown (7.5YR 5/6). Fine to coarse sands, mainly fine. Well graded. Subangular. Quartz. No bedding. moist.
	RUN 30	5.15	BH0009445T					56		
Box 15/18								57		
								57.7		~~clayey~~ gravelly sand (as above) with some clay and trace silt.
								58		
								59		
								60	VDA	

NOTES: General: USCS is modified for this log as follows:
Materials amounts are estimated by % volume instead of % weight.
(1) Badly broken core, accurate footage measurements not possible.
(2) Core breaks cannot be matched, accurate footage measurements not possible.

U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT **FORM GT.IA (REV. 2)**

ROCKY FLATS PLANT BOREHOLE LOG

PAGE 7 OF 8

Borehole Number: 51494
Location - North: ______ East: ______
Date: 062994
Geologist: JA Higgins / Dawn Ryer
Drilling Equip.: Resonant Sonic

Surface Elevation: ______
Area: OU11 West Spray Field
Total Depth: 92.0
Company: Stoller Project No.: OU11
Sample Type: Continuous Core

EG&G LOGGING SUPERVISOR APPROVAL S.M. Paus DATE 8/19/94

TOP/BOTTOM OF CORE IN BOX	TOP/BOTTOM OF INTERVAL	FEET OF CORE IN INTERVAL (FIELD MEASUREMENT)	SAMPLE NUMBER	FRACTURE ANGLE	BEDDING ANGLE	GRAIN SIZE DISTRIBUTION	USCS SYMBOL	DEPTH IN FEET	SOIL LITHOLOGIC LOG	SAMPLE DESCRIPTION
Box 16 of 18	RUN 31	5.0					SC	60–64		~~Clayey~~ gravelly sand with some clay / trace silt (as above) see pg. 6. Gravel up to 4".
Box 17 of 18	RUN 32	4.0	NO SAMPLES					64–67		~~Clayey~~ gravelly sand with some clay + trace silt (see page 5) Including pale olive clay. (5Y 6/3). Wet to saturated.
	RUN 33	4.0								
	RUN 34	3.0			[illegible]	70% gravel, 30% sand, 3% silt	GW	67–68		Sandy gravel with trace silt. Reddish yellow (7.5YR 6/6). Gravels ≤ 4". Sands subangular to subrounded mainly quartzite gravels, quartz sands. No bedding. Dry.
Box 18 of 18	RUN 35	2.0			19%	28% gravel, 60% sand, [illegible] clay, 3% silt	SC	68–69		~~Clayey~~ gravelly sand with some clay + trace silt. Strong brown (7.5YR 5/6) to dark red (2.5YR 4/6). Gravels up to 2", sands fine to coarse. Well graded. Gravels subangular to subrounded; sands dominantly subangular. Gravels dominantly quartzite; sands dominantly quartz. Moist to Dry.
	RUN 36	2.5			>90% clay	4% sand, 51% clay [illegible]		69–70		Top of bedrock. ~~Claystone~~ ~~Sandy~~ claystone. Pale olive (5Y (4/3)). Fe-oxide staining. Porosity ≈ 10%. No cement. ~~Not~~ friable. No bedding. ~~Dry~~ moist

NOTES: General: USCS is modified for this log as follows:
Materials amounts are estimated by % volume instead of % weight.
(1) Badly broken core, accurate footage measurements not possible.
(2) Core breaks cannot be matched, accurate footage measurements not possible.

U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT **FORM GT.1A (REV. 2)**

ROCKY FLATS PLANT BOREHOLE LOG

Borehole Number: 51494
Location - North: East:
Date: 06 8994
Geologist: [illegible]
Drilling Equip.: [illegible]

Surface Elevation:
Area: OU11 West Spray Field
Total Depth: 72.0'
Company: [illegible] Project No.: OU11
Sample Type: Continuous Core

EG&G LOGGING SUPERVISOR APPROVAL [signature] DATE 8/15/94

TOP/BOTTOM OF CORE IN BOX	TOP/BOTTOM OF INTERVAL	FEET OF CORE IN INTERVAL (FIELD MEASUREMENT)	SAMPLE NUMBER	FRACTURE ANGLE	BEDDING ANGLE	GRAIN SIZE DISTRIBUTION	USCS SYMBOL	DEPTH IN FEET	SOIL/LITHOLOGIC LOG	SAMPLE DESCRIPTION
Box 18 of 18 cont'd	Run 36	see pg. 7	NO SAMPLES			90% Clay 10% Silt		70 – 71 – 72		~~Silty~~ claystone (as above) See pg. 7.
										Total Depth = 72.0

NOTES: General: USCS is modified for this log as follows:
Materials amounts are estimated by % volume instead of % weight.
(1) Badly broken core, accurate footage measurements not possible.
(2) Core breaks cannot be matched, accurate footage measurements not possible.